



## INTRODUCTION

In 1982, the Portage Soil and Water Conservation District (SWCD), in cooperation with the USDA, Soil Conservation Service (SCS) took part in the National Resources Inventory (NRI). Information was collected on over 200 sample units to provide county reliable resource data.

This inventory provided natural resource data on (1) land use, (2) conservation treatment needs, (3) prime farmland, (4) potential cropland, (5) sheet and rill erosion, (6) flood prone areas, (7) wetlands, and (8) small bodies of water.

The study identifies erosion and land management problems in Portage County. These problems were addressed and priorities set in the District's long-range program. Top priorities include:

- A. Improve Water Quality
  - 1. Sediment Control - rural and urban areas
  - 2. Animal Waste Management
- B. Reduce Soil Erosion
- C. Improve Fish and Wildlife Habitat
- D. Provide Consultive Service - in areas dealing with soil and water management problems
- E. Provide soil and water information to schools, service clubs, units of government

This publication distributes the results of the Portage County Resources Inventory. The publication describes the soil resource base and highlights some problems that could reduce future soil productivity. Along with reduced production, off site damages could be expected. A primary objective of the Portage SWCD is to promote the wise use of the soil resource base in Portage County.

The information in this publication, like all information developed from a statistical study, has varying degrees of reliability or confidence levels. All values expressed here, representing over 10 percent of the county area, have a confidence level greater than 90 percent or they are at least 90 percent accurate. Smaller values, those representing less than 10 percent of the total county area, will be less than 90 percent accurate.

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### Land Use

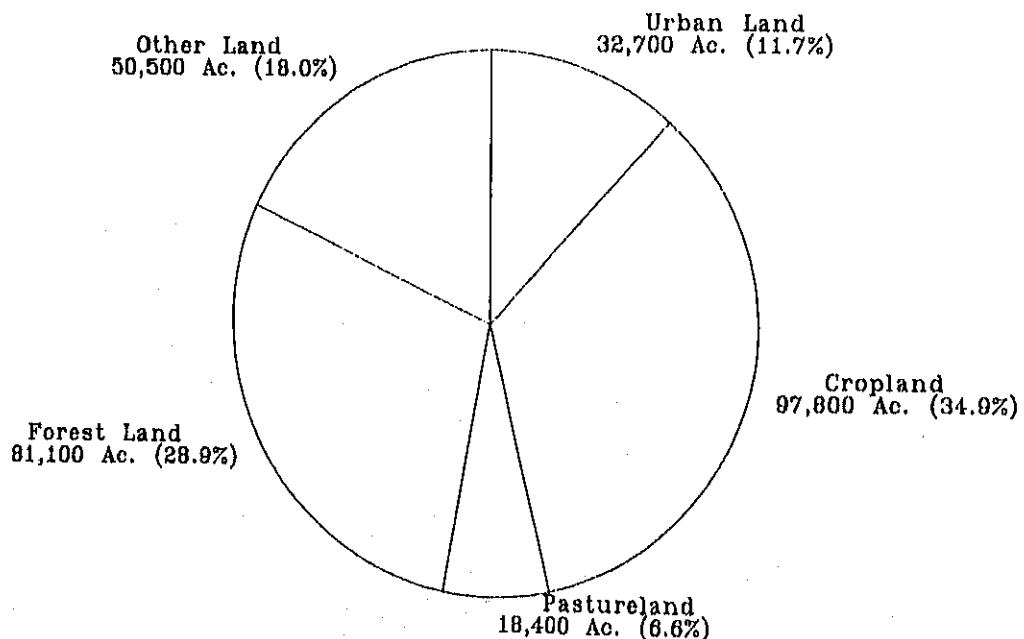
Land area measurements were made for Portage County during the 1980 Census by the U.S. Department of Commerce.

Table 1. Portage County Area Measurements

|   |               |
|---|---------------|
| Nonfederal Land and Small Bodies of Water | 280,500 Acres |
| Federal Land                              | 34,900 Acres  |
| Census Water (Large Bodies of Water)      | 7,300 Acres   |
|   |               |
| Total Surface Area                        | 322,700 Acres |

This report addresses only nonfederal land.

Figure 1. Portage County Land Use



TOTAL NONFEDERAL ACREAGE IN PORTAGE COUNTY = 280,500 ACRES

### KEY POINT:

- o Cropland is the largest land use in the county.

## Land Use by Capability Class

Soils can be classified in a number of ways. SCS uses a land capability classification system that groups soils on the basis of their ability to produce common cultivated crops and pasture plants without deterioration. Land capability classes and subclasses in Portage County are based on the soil survey.

Capability classes are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of agricultural use.

Class III soils have severe limitations that reduce the choice of agricultural use.

Class IV soils have very severe limitations that reduce the choice of plants, or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Each capability class except Class I has subclasses to identify specific limitations. The letter "e" stands for erosion risk; "w" for wetness; and "s" for soils limited mainly because they are shallow, droughty, or stony.

Table 2. Rural Nonfederal Land Use Acreage by Capability Class

| CLASS | CROPLAND<br>Acres | PASTURELAND<br>Acres | FOREST LAND<br>Acres | OTHER LAND     |  | TOTAL   |
|-------|-------------------|----------------------|----------------------|----------------|--|---------|
|       |                   |                      |                      | Rural<br>Acres |  |         |
| I     | 900               | 0                    | 900                  | 0              |  | 1,800   |
| II    | 38,100            | 4,300                | 18,600               | 5,900          |  | 66,900  |
| III   | 48,400            | 9,500                | 41,800               | 17,900         |  | 117,600 |
| IV    | 8,400             | 2,900                | 12,700               | 3,400          |  | 27,400  |
| V     | 1,700             | 1,300                | 2,500                | 2,100          |  | 7,600   |
| VI    | 300               | 400                  | 3,000                | 2,000          |  | 5,700   |
| VII   | 0                 | 0                    | 1,600                | 0              |  | 1,600   |
| VIII  | 0                 | 0                    | 0                    | 2,500          |  | 2,500   |
| NA    | 0                 | 0                    | 0                    | 6,300          |  | 6,300   |
| TOTAL | 97,800            | 18,400               | 81,100               | 40,100         |  | 237,400 |

KEY POINTS:

- o Eighty-eight percent of all cropland is on Classes II and III.
- o The majority of Classes IV, V, VI, and VII is in forest land.

### Prime Farmland

Prime farmland is one of several kinds of important farm-lands defined by the U.S. Department of Agriculture. It is of major importance in providing the Nation's short and long range needs for food and fiber. Prime farmland soils are defined as the soils that are best suited to producing food, fiber, forage, feed, and oilseed crops. Such soils have properties that are favorable for the economic production of sustained high yields of crops. Prime farmland soils produce the highest yields with minimal inputs of energy and economic resources. Farming these soils results in the least damage to the environment.

Prime farmland is also the easiest and least costly to develop for non-agricultural uses. Urbanization and other land uses have the potential to consume significant areas of prime farmland. Decisions need to be made at the local level to encourage wise use of agricultural lands.

Portage County has 131,900 acres of prime farmland with all of it in Capability Classes I, II, and III.

Table 3. Prime Farmland by Rural Nonfederal Land Use

| LAND USE    | TOTAL ACRES | PRIME FARMLAND |         |
|-------------|-------------|----------------|---------|
|             |             | Acres          | Percent |
| Cropland    | 97,800      | 65,200         | 67      |
| Pastureland | 18,400      | 10,000         | 54      |
| Forest Land | 81,100      | 43,500         | 54      |
| Other Land  | 40,100      | 13,200         | 33      |
| TOTAL       | 237,400     | 131,900        | 56      |

#### KEY POINTS:

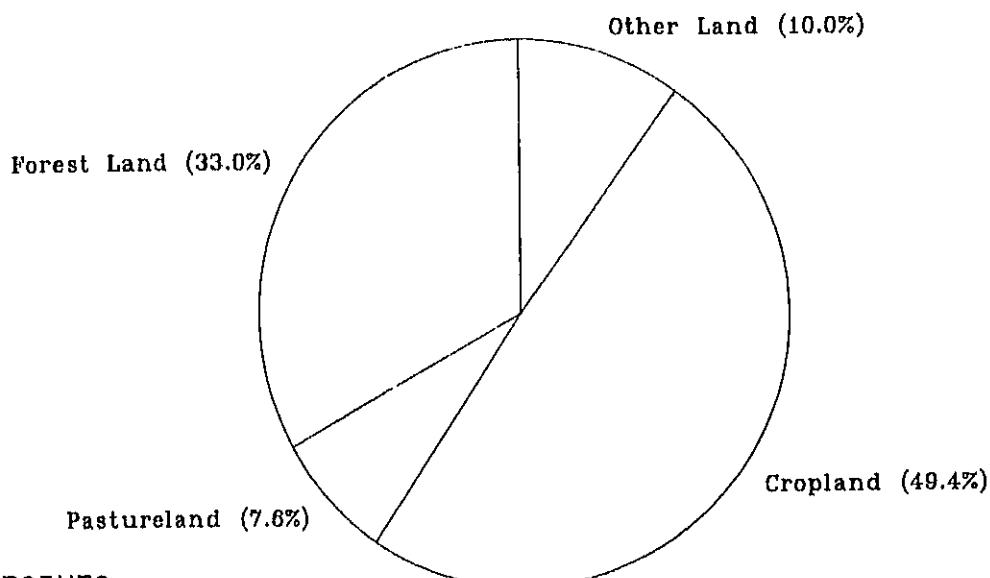
- o "Other land" figure includes 6,300 acres small built-up areas, less than 10 acres in size.

There is potential for converting other land uses to cropland since large acreages of prime farmland are in pastureland and forest land. Figure 2 illustrates the uses of prime farmland.

Figure 2.

## Use Of Prime Farmland

Portage County

KEY POINTS:

- o Forty-nine percent of all prime farmland is cropland.

Soil Erosion

Soil erosion is a continuously occurring natural process that loosens and transports soil particles. Erosion occurs slowly on undisturbed forest land and areas with adequate permanent vegetative cover. Soil losses are quite high on sloping cropland that is continually cultivated and left unprotected during several months every year.

Over 293 thousand tons of topsoil erode on Portage County agricultural land annually. Over 77 percent of the erosion is on cropland.

Table 4. Annual Soil Erosion by Agricultural Land Use on Nonfederal Land

| LAND USE       | ACRES          | TONS           | TONS/ACRE  |
|----------------|----------------|----------------|------------|
| Cropland       | 97,800         | 227,400        | 2.3        |
| Pastureland    | 18,400         | 5,000          | 0.3        |
| Forest Land    | 81,100         | 61,200         | 0.8        |
| <b>TOTAL</b>   | <b>197,300</b> | <b>293,600</b> |            |
| <b>AVERAGE</b> |                |                | <b>1.5</b> |

Table 5. Erosion on Nonfederal Cropland by Capability Class and Subclass

| CLASS AND SUBCLASS | ACRES  | TONS    | TONS/ACRE |
|--------------------|--------|---------|-----------|
| I                  | 900    | 400     | 0.4       |
| IIe                | 27,600 | 70,400  | 2.6       |
| IIw                | 10,400 | 14,900  | 1.4       |
| IIIs               | 100    | 0       | 0         |
| IIIe               | 30,800 | 82,000  | 2.7       |
| IIIw               | 17,600 | 22,600  | 1.3       |
| IVe                | 4,500  | 25,500  | 5.7       |
| IVw                | 3,900  | 10,300  | 2.6       |
| V                  | 1,700  | 100     | 0.1       |
| VIe                | 300    | 1,200   | 4.0       |
| TOTAL              | 97,800 | 227,400 |           |
| AVERAGE            |        |         | 2.3       |

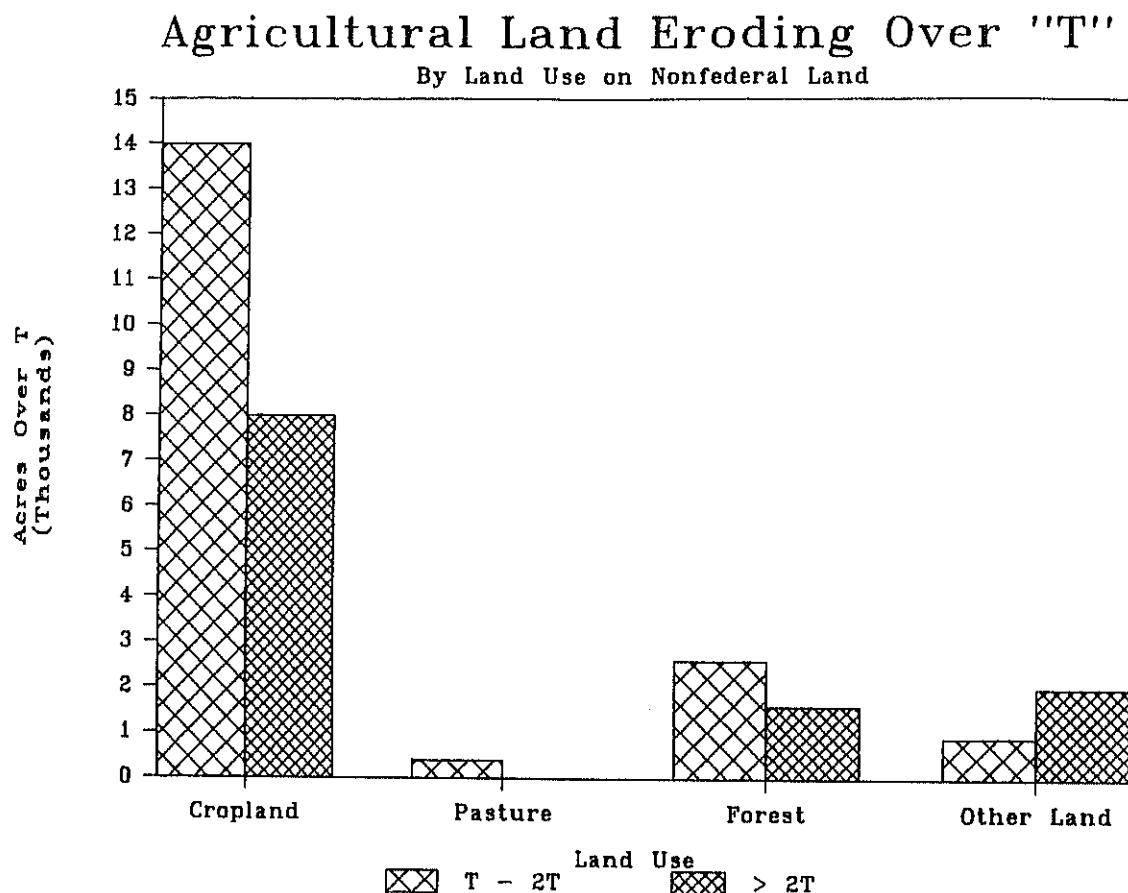
KEY POINTS:

- o Eighty-four percent of all cropland erosion is IIe, IIw, IIIe, and IIIw soils.
- o IVe soils have a high erosion rate.

Soil can tolerate small amounts of erosion and remain productive for agriculture. When erosion is above this tolerable limit, the soil resource base cannot be maintained and the future ability of the soil to produce crops is threatened. The tolerable soil loss ("T") ranges from three to five tons per acre per year, with most of the soils in Portage County having a "T" of three.

Almost 30,000 acres of agricultural land are eroding at rates greater than "T". There are 11,600 acres in the county eroding at rates greater than two times "T". These acres represent a serious threat to the productive capacity of the soil resource base.

Figure 3.



KEY POINTS:

- o Twenty-two thousand acres of cropland are eroding over "T".
- o Forty-two hundred acres of forest land are eroding over "T".

Cropland is located on the better soils in the county (see Tables 2 and 3). Twenty-three percent of these highly productive cropland acres are eroding excessively.

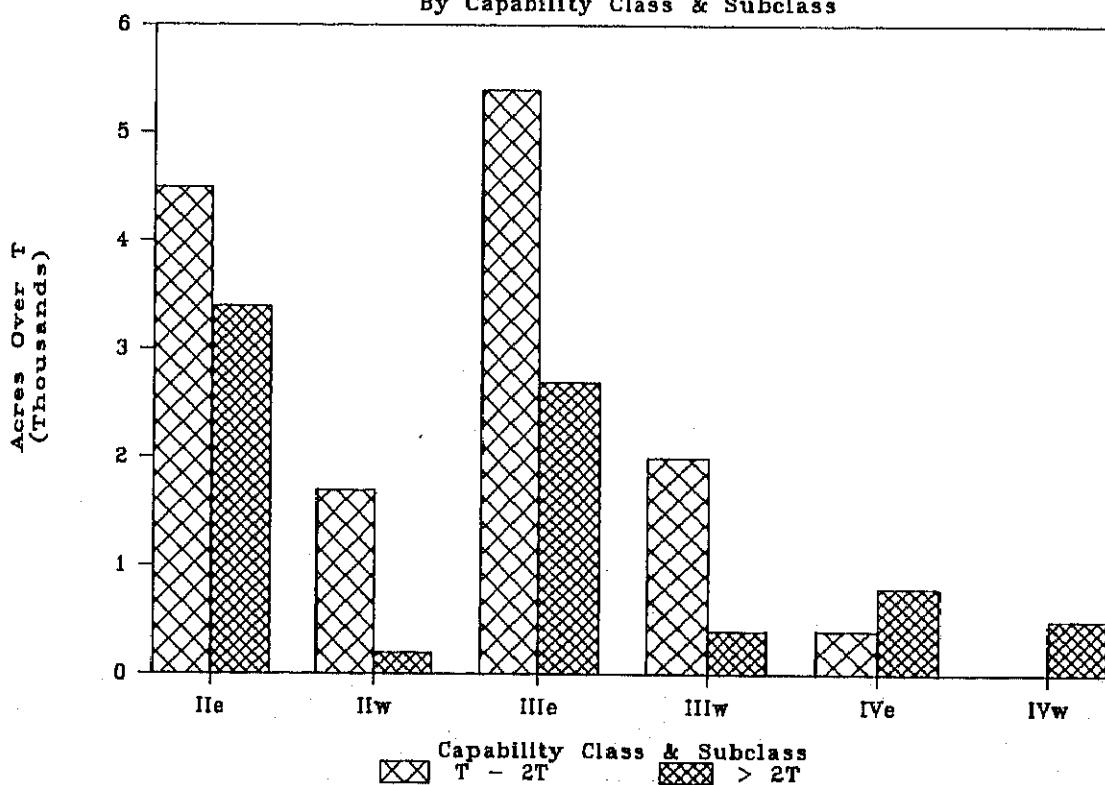
Table 6. Nonfederal Cropland in Relation to "T"  
by Capability Class and Subclass

| CAPABILITY<br>CLASS | TOTAL  | LESS     | GREATER    |           |
|---------------------|--------|----------|------------|-----------|
|                     |        | THAN "T" | "T" - "2T" | THAN "2T" |
| -----ACRES-----     |        |          |            |           |
| I                   | 900    | 900      | 0          | 0         |
| IIe                 | 27,600 | 19,700   | 4,500      | 3,400     |
| IIw                 | 10,400 | 8,500    | 1,700      | 200       |
| IIIs                | 100    | 100      | 0          | 0         |
| IIIe                | 30,800 | 22,700   | 5,400      | 2,700     |
| IIIw                | 17,600 | 15,200   | 2,000      | 400       |
| IVe                 | 4,500  | 3,300    | 400        | 800       |
| IVw                 | 3,900  | 3,400    | 0          | 500       |
| V                   | 1,700  | 1,700    | 0          | 0         |
| VIe                 | 300    | 300      | 0          | 0         |
| TOTAL               | 97,800 | 75,800   | 14,000     | 8,000     |

KEY POINTS:

- o Twenty-two thousand acres or 22 percent of all cropland is eroding over "T".
- o Over eight percent of all cropland is eroding over "2T".

Figure 4. Cropland Eroding Over "T"  
By Capability Class & Subclass



### Conservation Treatment Needs

Many acres of Portage County agricultural land need one or more different types of conservation treatment to either protect or improve soil and water resources. The different conservation practices used to accomplish these objectives vary by land use.

Cropland treatment usually involves practices like conservation cropping systems, conservation tillage, grassed waterway, grade stabilization structure, subsurface drainage, and open ditch construction. Improving water quality is accomplished by installation of animal waste storage pond and management systems. Conservation practices to protect forest land include livestock exclusion, timber stand improvement, and tree planting. Areas that are critically eroding can be seeded to grasses and legumes to control erosion. Land designated as adequately protected is properly managed for production and protected from excessive erosion.

Table 7. Conservation Treatment Needs and Percent by Land Use on Nonfederal Land

| LAND USE     | TOTAL ACRES    | TOTAL ACRES NEEDING TREATMENT | % TOTAL ACRES NEEDING TREATMENT |
|--------------|----------------|-------------------------------|---------------------------------|
| Cropland     | 97,800         | 28,200                        | 29                              |
| Pastureland  | 18,400         | 8,400                         | 46                              |
| Forest Land  | 81,100         | 36,800                        | 45                              |
| Other Land   | 40,100         | 4,300                         | 13                              |
| <b>TOTAL</b> | <b>231,100</b> | <b>77,700</b>                 | <b>34</b>                       |

## SUMMARY

Agriculture accounts for 82 percent of Portage County land use, about 35 percent is cropland. About 34,000 acres of land are owned by the federal government and 7,000 acres are covered by large bodies of water.

Almost 60 percent of Portage County is prime farmland. There are many acres in the county that could be converted to cropland. However, due to the location of the county there is a high demand for other nonagricultural land uses.

Serious erosion problems exist on 22 thousand acres of cropland as a result of a shift from crop rotations to more intensive row crop agriculture.